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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jungi Kondo

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WENDEROTH, LIND & PONACK L.L.P.

1030 15th Street, N.W.

Suite 400 East

Washington, DC 20005-1503

EXAMINER

NGUYEN, LEON VIET Q

ART UNIT

PAPER NUMBER

2611

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/575,359	Applicant(s) KONDO ET AL.	
	Examiner LEON-VIET Q. NGUYEN	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/11/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 4/11/06 was filed after the mailing date 4/11/06. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4, 5, 9, 10, 13, 14 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Vialle (EP1359684).

Re claim 1, Vialle discloses a channel-estimating apparatus comprising:

an input unit (component 6 in fig. 4) operable to receive several pieces of channel information (the coefficients formed by component 5 in fig. 3) from a plurality of receivers (§0025, each rake receiver in fig. 4 receives the coefficients from component 5), said plurality of receivers being operable to perform MIMO communication through a plurality of channels (fig. 1);

an estimating unit (component 22 in fig. 4) operable to collectively estimate statuses of the plurality of channels (§0026, the channel estimation) in accordance with

Art Unit: 2611

the several pieces of channel information received by said input unit (§0025, the coefficients formed by component 5 in fig. 3), whereby estimation results are generated (§0026, the channel estimation results from component 22); and
an output unit (component 26 in fig. 4) operable to feed the estimation results (the output of component 22 in fig. 4) into said plurality of receivers (fig. 4).

Re claim 4, Vialle discloses a channel-estimating apparatus wherein said estimating unit generates the estimation results for all of the plurality of channels (§0026, component 22 in fig. 4).

Re claim 5, Vialle discloses a channel-estimating apparatus wherein the estimation results are a combination of as many pieces of estimation results as the plurality of channels (§0025).

Re claims 9 and 10, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 1.

Re claim 13, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 4.

Re claim 14, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 5.

Re claim 18, Vialle discloses a communication system wherein the MIMO communication is made through antennas possessed by at least two receivers among said plurality of receivers (rake receivers in fig. 4).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 6-8, 11, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vialle (EP1359684) in view of Walton et al (US20030125040).

Re claim 2, Vialle fails to teach a channel-estimating apparatus wherein each of said plurality of receivers comprises a plurality of antennas and a plurality of receiving units, each of said plurality of receiving units being connected to corresponding one of said plurality of antennas, and wherein each of the several pieces of channel information is received electrical power of a signal received by each of said plurality of receiving units.

However Walton teaches a channel-estimating apparatus wherein each of said plurality of receivers (106a-106n in fig. 2A) comprises a plurality of antennas (252a-252r in fig. 2A) and a plurality of receiving units (254a-254r in fig. 2A), each of said plurality of receiving units being connected to corresponding one of said plurality of antennas (fig.

Art Unit: 2611

2A), and wherein each of the several pieces of channel information is received electrical power of a signal received by each of said plurality of receiving units (§§0258-§0259).

Therefore taking the combined teachings of Vialle and Walton as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the feature of Walton into the apparatus of Vialle. The motivation to combine Walton and Vialle would be to enhance system capacity (§0055 of Walton).

Re claim 6, the modified invention of Vialle teaches a channel-estimating apparatus wherein each of said plurality of receiving units (component 2 in fig. 4 of Vialle) possesses weighting coefficients for use in weighting the received electrical power (component 25 in fig. 4 of Vialle), and wherein said estimating unit generates coefficients as the estimation results, the coefficients being corresponding to the weighting coefficients (§0026 of Vialle).

Re claim 7, the modified invention of Vialle teaches a channel-estimating apparatus wherein said output unit (component 26 in fig. 4 of Vialle) feeds a coefficient set into said plurality of receivers (§0026 and fig. 4 of Vialle), the coefficient set including the coefficients (§0028 of Vialle).

Re claim 8, the modified invention of Vialle teaches a channel-estimating apparatus wherein the coefficients in the coefficient set correspond in number to all of said plurality of antennas possessed by said plurality of receivers (§0028 of Vialle).

Re claim 11, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 2.

Re claim 15, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 6.

Re claim 16, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 7.

Re claim 17, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 8.

5. Claims 3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vialle (EP1359684) and Walton et al (US20030125040) in view of Aldajani et al (US7415285).

Re claim 3, the modified invention of Vialle fails to teach a channel-estimating apparatus wherein said estimating unit divides the received electrical power by each predetermined electrical power value, thereby generating the estimation results.

However Aldajani teaches dividing a received electrical power by each predetermined electrical power value (col. 2 lines 43-46, the ratio of the predicted power fading divided by the estimated power fading), thereby generating estimation results

Art Unit: 2611

(col. 2 lines 43-46). Although Aldajani teaches power fading, one of ordinary skill in the art would have found it obvious to first calculate the power before the power fading and use those values to perform channel estimation.

Therefore taking the modified teachings of Vialle and Walton with Aldajani as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the feature of Aldajani into the apparatus of Vialle and Walton. The motivation to combine Walton, Aldajani and Vialle would be to reduce error variance (col. 1 lines 66-67 of Aldajani).

Re claim 12, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 3.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON-VIET Q. NGUYEN whose telephone number is (571)270-1185. The examiner can normally be reached on Monday-Friday, alternate Friday off, 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon-Viet Q Nguyen/
Examiner, Art Unit 2611

/David C. Payne/
Supervisory Patent Examiner, Art Unit 2611